

**TITLE 252. DEPARTMENT OF ENVIRONMENTAL QUALITY  
CHAPTER 100. AIR POLLUTION CONTROL  
SUBCHAPTER 47. CONTROL OF EMISSIONS FROM EXISTING MUNICIPAL  
SOLID WASTE LANDFILLS**

**252:100-47-3. Definitions**

(a) ~~The definitions in 40 CFR 60.751 are hereby incorporated by reference as they exist on July 1, 2002.~~

(b) ~~The following words and terms when used in this Subchapter~~subchapter, shall have the following meaning, unless the context clearly indicates otherwise:

**"Active collection system"** means a gas collection system that uses gas mover equipment.

**"Active landfill"** means a landfill in which solid waste is being placed or a landfill that is planned to accept waste in the future.

**"Closed area"** means a separately lined area of an MSW landfill in which solid waste is no longer being placed. If additional solid waste is placed in that area of the landfill, that landfill area is no longer closed. The area must be separately lined to ensure that the landfill gas does not migrate between open and closed areas.

**"Closed landfill"** means a landfill in which solid waste is no longer being placed, and in which no additional solid wastes will be placed without first filing a notification of modification as prescribed under 40 CFR 60.7(a)(4). Once a notification of modification has been filed, and additional solid waste is placed in the landfill, the landfill is no longer closed.

**"Closed landfill subcategory"** means a closed landfill that has submitted a closure report as specified in OAC 252:100-47-12(f) on or before September 27, 2017.

**"Closure"** means that point in time when a landfill becomes a closed landfill.

**"Commercial solid waste"** means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes.

**"Controlled landfill"** means any landfill at which collection and control systems are required under this Subchapter as a result of the NMOC emission rate. The landfill is considered controlled at the time a collection and control system design plan is prepared in compliance with 252:100-47-7(e)(2).

**"Corrective action analysis"** means a description of all reasonable interim and long-term measures, if any, that are available, and an explanation of why the selected corrective action(s) is/are the best alternative(s), including, but not limited to, considerations of cost effectiveness, technical feasibility, safety, and secondary impacts.

**"Design capacity"** means the maximum amount of solid waste a landfill can accept, as indicated in terms of volume or mass in the most recent permit issued by DEQ, plus any in-place waste not accounted for in the most recent permit. If the owner or operator chooses to convert the design capacity from volume to mass or from mass to volume to demonstrate its design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, the calculation must include a site-specific density, which must be recalculated annually.

**"Disposal facility"** means all contiguous land and structures, other appurtenances, and improvements on the land used for the disposal of solid waste.

**"Emission rate cutoff"** means the threshold annual emission rate to which a landfill compares its estimated emission rate to determine if control under the regulation is required.

**"Enclosed combustor"** means an enclosed firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. An enclosed flare is considered an enclosed combustor.

**(4)"Existing municipal solid waste landfill" or "existing MSW landfill"** means a municipal solid waste landfill that commenced construction, modification, or reconstruction before ~~May 30, 1994~~July 17, 2014 and accepted waste after November 8, 1987.

**"Flare"** means an open combustor without enclosure or shroud.

**"Gas mover equipment"** means the equipment (i.e., fan, blower, compressor) used to transport landfill gas through the header system.

**"Gust"** means the highest instantaneous wind speed that occurs over a 3-second running average.

**"Household waste"** means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including, but not limited to, single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas). Household waste does not include fully segregated yard waste. Segregated yard waste means vegetative matter resulting exclusively from the cutting of grass, the pruning and/or removal of bushes, shrubs, and trees, the weeding of gardens, and other landscaping maintenance activities. Household waste does not include construction, renovation, or demolition wastes, even if originating from a household.

**"Industrial solid waste"** means solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under Subtitle C of the Resource Conservation and Recovery Act, 40 CFR Parts 264 and 265. Such waste may include, but is not limited to, waste resulting from the following manufacturing processes: electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste.

**"Interior well"** means any well or similar collection component located inside the perimeter of the landfill waste. A perimeter well located outside the landfilled waste is not an interior well.

**"Landfill"** means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile as those terms are defined under OAC 252:515-1-2.

**"Lateral expansion"** means a horizontal expansion of the waste boundaries of an existing MSW landfill. A lateral expansion is not a modification unless it results in an increase in the design capacity of the landfill.

**"Leachate recirculation"** means the practice of taking the leachate collected from the landfill and reapplying it to the landfill by any of one of a variety of methods, including pre-wetting of the waste, direct discharge into the working face, spraying, infiltration ponds, vertical injection wells, horizontal gravity distribution systems, and pressure distribution systems.

**"Modification"** means an increase in the permitted volume design capacity of the landfill by either lateral or vertical expansion based on its permitted design capacity as of July 17, 2014. Modification does not occur until the owner or operator commences construction on the lateral or vertical expansion.

"Municipal solid waste landfill" or "MSW landfill" means an entire disposal facility in a contiguous geographical space where household waste is placed in or on land. An MSW landfill may also receive other types of Resource Conservation and Recovery Act (RCRA) Subtitle D wastes (40 CFR 257.2) such as commercial solid waste, nonhazardous sludge, and non-hazardous industrial solid waste. Portions of an MSW landfill may be separated by access roads. An MSW landfill may be publicly or privately owned. An MSW landfill may be a new MSW landfill, an existing MSW landfill, or a lateral expansion.

"Municipal solid waste landfill emissions" or "MSW landfill emissions" means gas generated by the decomposition of organic waste deposited in an MSW landfill or derived from the evolution of organic compounds in the waste.

"NMOC" means nonmethane organic compounds, as measured according to the provisions of 252:100-47-9.

"Nondegradable waste" means any waste that does not decompose through chemical breakdown or microbiological activity. Examples are, but are not limited to, concrete, municipal waste combustor ash, and metals.

"Passive collection system" means a gas collection system that solely uses positive pressure within the landfill to move the gas rather than using gas mover equipment.

"Root cause analysis" means an assessment conducted through a process of investigation to determine the primary cause, and any other contributing causes, of positive pressure at a wellhead.

"Sludge" means the term sludge as defined in 27A O.S. Section 2-10-401.

"Solid waste" means the term solid waste as defined in 27A O.S. Section 2-10-103.

(2) "State Plan" means a program that the State DEQ is responsible for developing and implementing to achieve compliance with the emission guidelines in Subpart Cc-Cf of 40 CFR Part 60.

"Sufficient density" means any number, spacing, and combination of collection system components, including vertical wells, horizontal collectors, and surface collectors, necessary to maintain emission and migration control as determined by measures of performance set forth in this subchapter.

"Sufficient extraction rate" means a rate sufficient to maintain a negative pressure at all wellheads in the collection system without causing air infiltration, including any wellheads connected to the system as a result of expansion or excess surface emissions, for the life of the blower.

"Treated landfill gas" means landfill gas processed in a treatment system as defined in this subchapter.

"Treatment system" means a system that filters, de-waters, and compresses landfill gas for sale or beneficial use.

"Untreated landfill gas" means any landfill gas that is not treated landfill gas.

#### **252:100-47-4. Terminology related to 40 CFR [REVOKED]**

For purposes of interfacing with 40 CFR, the following terms apply:

- (1) "Administrator" is synonymous with Executive Director.
- (2) "EPA" is synonymous with the Department of Environmental Quality or DEQ.
- (3) "State, local, or tribal agency" is synonymous with the DEQ.

### **252:100-47-5. General provisions**

(a) **Applicability.** Except as provided in subparagraphs (1) and (2) of this paragraph, the provisions of this ~~Subchapter~~ ~~subchapter~~ are applicable to all existing MSW landfills in the State of Oklahoma. This ~~Subchapter~~ ~~subchapter~~ is also an applicable requirement for existing MSW landfill sites on the National Priorities List in Appendix B of 40 CFR Part 300.

(1) Physical or operational changes made to an existing MSW landfill solely to comply with this ~~Subchapter~~ ~~subchapter~~ are not considered a modification or reconstruction and would not subject an existing MSW landfill to the requirements of 40 CFR Part 60, ~~Subpart~~ ~~Subparts~~ WWW (Standards of Performance for Municipal Solid Waste Landfills) or XXX (Standards of Performance for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification After July 17, 2014).

(2) Remedial activities required by or conducted pursuant to state or federal law are not considered construction, reconstruction, or modification for the purposes of this ~~Subchapter~~ ~~subchapter~~.

(b) **Exemptions.** The DEQ, with EPA approval, may provide for the application of less stringent emissions standards or longer compliance schedules than those otherwise required by this ~~Subchapter~~ ~~subchapter~~, provided that at least one of the circumstances listed below are applicable to the MSW landfill:

- (1) Unreasonable cost of control resulting from facility age, location, or basic design; or
- (2) Physical impossibility of installing necessary control equipment; or
- (3) Other factors specific to the facility that make application of a less stringent standard or final compliance time significantly more reasonable.

### **252:100-47-6. Permits required**

(a) **Part 70 operating permits.**

(1) The owner or operator of an existing MSW landfill with a design capacity less than 2.5 million megagrams or 2.5 million cubic meters is not required to obtain a Part 70 permit for the landfill, unless the landfill is otherwise a Part 70 source.

(2) The owner or operator of an existing MSW landfill with a design capacity greater than or equal to 2.5 million megagrams and 2.5 million cubic meters, that is not otherwise a Part 70 source, is subject to OAC 252:100-8 as a Part 70 source ninety (90) days after the effective date of the ~~state plan~~ State Plan, even if the initial design capacity report was submitted earlier.

(3) When an existing MSW landfill is closed, the owner or operator is no longer subject to the requirement to maintain a Part 70 permit for the landfill if the landfill is not otherwise subject to the requirements of OAC 252:100-8 and if either of the following conditions is met:

(A) The landfill was never subject to the requirement for a control system under 252:100-47-7.

(B) The owner or operator meets the conditions for control system removal specified in 252:100-47-7.

(4) When an MSW landfill subject to this subchapter is in the closed landfill subcategory, the owner or operator is not subject to the following reports of this subchapter, provided the owner or operator submitted these reports under the provisions of 40 CFR Part 60, Subpart WWW or under this subchapter on or before July 17, 2014:

(A) Initial design capacity report specified in 252:100-47-12(a).

(B) Initial or subsequent NMOC emission rate report specified in 252:100-47-12(c), provided that the most recent NMOC emission rate report indicated the NMOC emissions were below 50 Mg/yr.

(C) Collection and control system design plan specified in 252:100-47-12(d).

(D) Closure report specified in 252:100-47-12(f).

(E) Equipment removal report specified in 252:100-47-12(g).

(F) Initial annual report specified in 252:100-47-12(h).

(G) Initial performance test report in 252:100-47-12(i).

(b) **Construction permits.** The owner or operator of any existing MSW landfill that installs a MSW landfill gas collection and control system is required to obtain a construction permit as provided by 252:100-7-15 or 252:100-8-4. ~~If the landfill has a design capacity of at least 2.5 million cubic meters and 2.5 million megagrams and an estimated nonmethane organic compounds (NMOC) emission rate of at least 50 megagrams per year, calculated in accordance with Section 9 of this Subchapter, the owner or operator of the MSW landfill shall also comply with the following requirements:~~

(1) The owner or operator of an existing MSW landfill is required to comply with paragraphs (2) through (6) of this subsection if:

(A) The landfill has a design capacity of at least 2.5 million cubic meters and 2.5 million megagrams, and

(B) The landfill has accepted waste at any time since November 8, 1987, or has additional design capacity available for future waste deposition, and

(C) The landfill is:

(i) In the closed landfill subcategory and has an NMOC emission rate greater than or equal to 50 megagrams per year or Tier 4 surface emissions monitoring shows a surface emission concentration of 500 parts per million methane or greater, or

(ii) Not in the closed landfill subcategory and has an NMOC emission rate greater than or equal to 34 megagrams per year and, if Tier 4 surface emissions monitoring is performed, Tier 4 surface emissions monitoring shows a surface emission concentration of 500 parts per million methane or greater.

~~(2) The application for a construction permit and the collection and control system design plan shall be submitted to the DEQ within 12 months after the initial or any annual NMOC emissions rate report indicates that the emission rate equals or exceeds 5034 megagrams per year (50 megagrams per year for the closed landfill subcategory), unless site specific sampling demonstrates that the emission rate is less than 50 megagrams per year~~

~~(3) All contracts for installation of the emission control systems or for process modifications shall be awarded and all orders for the purchase of component parts to accomplish emission control or process modification shall be completed within 3 months of the submittal of the design plan under paragraph (b)(12) of this section.~~

~~(34) The installation of the collection and control system shall commence within 3 months of the awarding of contracts under paragraph (b)(13) of this section.~~

~~(45) The installation of the collection and control system shall be completed within 18 months of the submittal of the design plan under paragraph (b)(12) of this section.~~

~~(56) Within 30 months of the first annual report in which the NMOC emission rate equals or exceeds 50 megagrams per year, the MSW landfill shall be in compliance with paragraphs (b)(1) through (b)(4) of this section. Planning, awarding of contracts, installing, and starting up MSW landfill air emission collection and control equipment that is capable of meeting the~~

emission standards under 252:100-47-7 must be completed within 30 months after the date an NMOC emission rate report shows NMOC emissions equal or exceed 34 megagrams per year (50 megagrams per year for the closed landfill subcategory).

### **252:100-47-7. Emission standards**

An owner or operator of an existing MSW landfill shall comply with all provisions specified in 40 CFR 60.752, which is hereby incorporated by reference as it exists on July 1, 2002.

(a) **Landfills.** Each owner or operator of an MSW landfill having a design capacity greater than or equal to 2.5 million megagrams by mass and 2.5 million cubic meters by volume is required to collect and control MSW landfill emissions at each MSW landfill that meets the following conditions:

(1) The landfill has accepted waste at any time since November 8, 1987, or has additional design capacity available for future waste deposition.

(2) The landfill commenced construction, reconstruction, or modification on or before July 17, 2014.

(3) The landfill has an NMOC emission rate greater than or equal to 34 megagrams per year or Tier 4 surface emissions monitoring shows a surface emission concentration of 500 parts per million methane or greater.

(4) The landfill is in the closed landfill subcategory and has an NMOC emission rate greater than or equal to 50 megagrams per year or Tier 4 surface emissions monitoring shows a surface emission concentration of 500 parts per million methane or greater.

(b) **Collection system.** The owner or operator of each MSW landfill meeting the conditions in subsection (a) of this section shall install a gas collection and control system (GCCS) meeting the requirements in paragraphs (b)(1) through (3) and subsection (c) of this section.

(1) **Collection system.** Install and start up a collection and control system that captures the gas generated within the landfill within 30 months after:

(A) The first annual report in which the NMOC emission rate equals or exceeds 34 megagrams per year, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 34 megagrams per year, as specified in OAC 252:100-47-12(d)(4); or

(B) The first annual NMOC emission rate report for a landfill in the closed landfill subcategory in which the NMOC emission rate equals or exceeds 50 megagrams per year, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 50 megagrams per year, as specified in 252:100-47-12(d)(4); or

(C) The most recent NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year based on Tier 2, if the Tier 4 surface emissions monitoring shows a surface methane emission concentration of 500 parts per million methane or greater as specified in 252:100-47-12(d)(4)(C).

(2) **Active.** An active collection system must:

(A) Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control system equipment.

(B) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active; or 2 years or more if closed or at final grade.

(C) Collect gas at a sufficient extraction rate.

- (D) Be designed to minimize off-site migration of subsurface gas.
- (3) **Passive.** A passive collection system must:
- (A) Comply with the provisions specified in subparagraphs (b)(2)(A), (B), and (D) of this section.
- (B) Be installed with liners on the bottom and all sides in all areas in which gas is to be collected. The liners must be installed as required under 40 CFR 258.40.
- (c) **Control system.** Gases collected from within the landfill shall be controlled through the use of control devices meeting the following requirements, except as provided in 40 CFR 60.24.
- (1) A non-enclosed flare designed and operated in accordance with the parameters established in 40 CFR 60.18 except as noted in 252:100-47-11(d); or
- (2) A control system designed and operated to reduce NMOC by 98 weight percent; or when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen or less. The reduction efficiency or concentration in parts per million by volume must be established by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in 252:100-47-9(d). The performance test is not required for boilers and process heaters with design heat input capacities equal to or greater than 44 megawatts that burn landfill gas for compliance with this subchapter.
- (A) If a boiler or process heater is used as the control device, the landfill gas stream must be introduced into the flame zone.
- (B) The control device must be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in 252:100-47-11.
- (C) For the closed landfill subcategory, the initial or most recent performance test conducted to comply with 40 CFR Part 60, Subpart WWW or a state plan implementing Subpart Cc of 40 CFR Part 60 on or before July 17, 2014 is sufficient for compliance with this subchapter.
- (3) Route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either paragraph (c)(1) or (2) of this section.
- (4) All emissions from any atmospheric vent from the gas treatment system are subject to the requirements of subsections (b) or (c) of this section. For purposes of this subchapter, atmospheric vents located on the condensate storage tank are not part of the treatment system and are exempt from the requirements of subsections (b) or (c) of this section.
- (d) **Design capacity.** Each owner or operator of an MSW landfill having a design capacity less than 2.5 million megagrams by mass or 2.5 million cubic meters by volume shall submit an initial design capacity report to the Director as provided in 252:100-47-12(a). The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. Any density conversions must be documented and submitted with the report. Submittal of the initial design capacity report fulfills the requirements of this subchapter except as provided in paragraphs (d)(1) and (2) of this section.

(1) The owner or operator must submit an amended design capacity report as provided in 252:100-47-12(b). If the design capacity increase is the result of a modification, as defined in this subchapter, that was commenced after July 17, 2014, then the landfill becomes subject to New Source Performance Standard, 40 CFR Part 60, Subpart XXX instead of this subchapter. If the design capacity increase is the result of a change in operating practices, density, or some other change that is not a modification as defined in this subchapter, then the landfill remains subject to this subchapter.

(2) When an increase in the maximum design capacity of a landfill with an initial design capacity less than 2.5 million megagrams or 2.5 million cubic meters results in a revised maximum design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, the owner or operator must comply with subsection (e) of this section.

(e) **Emissions.** Each owner or operator of an MSW landfill having a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters shall either install a collection and control system as provided in subsections (b) and (c) of this section or calculate an initial NMOC emission rate for the landfill using the procedures specified in 252:100-47-9(a). The NMOC emission rate must be recalculated annually, except as provided in 252:100-47-12(c)(3).

(1) If the calculated NMOC emission rate is less than 34 megagrams per year, the owner or operator must:

(A) Submit an annual NMOC emission rate report according to 252:100-47-12(c), except as provided in 252:100-47-12(c)(3); and

(B) Recalculate the NMOC emission rate annually using the procedures specified in 252:100-47-9(a) until such time as the calculated NMOC emission rate is equal to or greater than 34 megagrams per year, or the landfill is closed.

(i) If the calculated NMOC emission rate, upon initial calculation or annual recalculation required in subparagraph (e)(1)(B) of this section, is equal to or greater than 34 megagrams per year, the owner or operator must either: comply with subsections (b) and (c) of this section; calculate NMOC emissions using the next higher tier in 252:100-47-9; or conduct a surface emission monitoring demonstration using the procedures specified in 252:100-47-9(a)(6).

(ii) If the landfill is permanently closed, a closure report must be submitted to the Director as provided in 252:100-47-12(f), except for exemption allowed under 252:100-47-6(a)(4)(D).

(iii) For the closed landfill subcategory, if the most recently calculated NMOC emission rate is equal to or greater than 50 megagrams per year, the owner or operator must either: submit a gas collection and control system design plan as specified in 252:100-47-12(d), except for exemptions allowed under 252:100-47-6(a)(4)(C), and install a collection and control system as provided in subsections (b) and (c) of this section; calculate NMOC emissions using the next higher tier in 252:100-47-9; or conduct a surface emission monitoring demonstration using the procedures specified in 252:100-47-9(a)(6).

(2) If the calculated NMOC emission rate is equal to or greater than 34 megagrams per year using Tier 1, 2, or 3 procedures, the owner or operator must either: submit a collection and control system design plan prepared by a professional engineer to the Director within 1 year as specified in 252:100-47-12(d), except for exemptions allowed under 252:100-47-6(a)(4)(C); calculate NMOC emissions using a higher tier in 252:100-47-9; or conduct a

surface emission monitoring demonstration using the procedures specified in 252:100-47-9(a)(6).

(3) For the closed landfill subcategory, if the calculated NMOC emission rate is equal to or greater than 50 megagrams per year using Tier 1, 2, or 3 procedures, the owner or operator must either: submit a collection and control system design plan as specified in 252:100-47-12(d), except for exemptions allowed under 252:100-47-6(a)(4)(C); calculate NMOC emissions using a higher tier in 252:100-47-9; or conduct a surface emission monitoring demonstration using the procedures specified in 252:100-47-9(a)(6).

**(f) Removal criteria.** The collection and control system may be capped, removed, or decommissioned if the following criteria are met:

(1) The landfill is a closed landfill. A closure report must be submitted to the Director as provided in 252:100-47-12(f).

(2) The collection and control system has been in operation a minimum of 15 years or the landfill owner or operator demonstrates that the GCCS will be unable to operate for 15 years due to declining gas flow.

(3) Following the procedures specified in 252:100-47-9(b), the calculated NMOC emission rate at the landfill is less than 34 megagrams per year on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart.

(4) For the closed landfill subcategory, following the procedures specified in 252:100-47-9(b), the calculated NMOC emission rate at the landfill is less than 50 megagrams per year on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart.

### **252:100-47-8. Operational standards for collection and control systems**

An owner or operator of an existing MSW landfill shall comply with all provisions specified in 40 CFR 60.753, which is hereby incorporated by reference as it exists on July 1, 2002.

Each owner or operator of an MSW landfill with a gas collection and control system used to comply with the provisions of OAC 252:100-47-7(b) and (c) must:

(1) Operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:

(A) Five (5) years or more if active; or

(B) Two (2) years or more if closed or at final grade.

(2) Operate the collection system with negative pressure at each wellhead except under the following conditions:

(A) A fire or increased well temperature. The owner or operator must record instances when positive pressure occurs in efforts to avoid a fire. These records must be submitted with the annual reports as provided in 252:100-47-12(h)(1).

(B) Use of a geomembrane or synthetic cover. The owner or operator must develop acceptable pressure limits in the design plan.

(C) A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes must be approved by the Director as specified in 252:100-47-12(d).

(3) Operate each interior wellhead in the collection system with a landfill gas temperature less than 55 degrees Celsius (131 degrees Fahrenheit). The owner or operator may establish a higher operating temperature value at a particular well. A higher operating value demonstration must be submitted to the Director for approval and must include supporting

data demonstrating that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens. The demonstration must satisfy both criteria in order to be approved (i.e., neither causing fires nor killing methanogens is acceptable).

(4) Operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. To determine if this level is exceeded, the owner or operator must conduct surface testing using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 252:100-47-10(d). The owner or operator must conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover and all cover penetrations. Thus, the owner or operator must monitor any openings that are within an area of the landfill where waste has been placed and a gas collection system is required. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan must be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30-meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing.

(5) Operate the system such that all collected gases are vented to a control system designed and operated in compliance with 252:100-47-7(c). In the event the collection or control system is not operating, the gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour of the collection or control system not operating.

(6) Operate the control system at all times when the collected gas is routed to the system.

(7) If monitoring demonstrates that the operational requirements in paragraph (2), (3), or (4) of this section are not met, corrective action must be taken as specified in 252:100-47-10(a)(3) and (5) or (c). If corrective actions are taken as specified in 252:100-47-10, the monitored exceedance is not a violation of the operational requirements in this section.

### **252:100-47-9. Test methods and procedures**

An owner or operator of an existing MSW landfill shall comply with all provisions specified in 40 CFR 60.754, which is hereby incorporated by reference as it exists on July 1, 2002.

(a)(1) **NMOC Emission Rate.** The landfill owner or operator must calculate the NMOC emission rate using either Equation 1, provided in Appendix R and referenced in subparagraph (a)(1)(A) of this section, or Equation 2, also provided in Appendix R and referenced in subparagraph (a)(1)(B) of this section. Both Equation 1 and Equation 2 may be used if the actual year-to-year solid waste acceptance rate is known, as specified in subparagraph (a)(1)(A) of this section, for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in subparagraph (a)(1)(B) of this section, for part of the life of the landfill. The values to be used in both Equation 1 and Equation 2 are 0.05 per year for  $k$ , 170 cubic meters per megagram for  $L_o$ , and 4,000 parts per million by volume as hexane for the  $C_{NMOC}$ . For landfills located in geographical areas with a 30-year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorologic site, the  $k$  value to be used is 0.02 per year.

(A)(i) Equation 1 in Appendix R must be used if the actual year-to-year solid waste acceptance rate is known.

(ii) The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for  $M_i$  if documentation of the nature and amount of such wastes is maintained.

(B)(i) Equation 2 in Appendix R must be used if the actual year-to-year solid waste acceptance rate is unknown.

(ii) The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value of R, if documentation of the nature and amount of such wastes is maintained.

(2) **Tier 1.** The owner or operator must compare the calculated NMOC mass emission rate to the standard of 34 megagrams per year.

(A) If the NMOC emission rate calculated in paragraph (a)(1) of this section is less than 34 megagrams per year, then the owner or operator must submit an NMOC emission rate report according to OAC 252:100-47-12(c), and must recalculate the NMOC mass emission rate annually as required under 252:100-47-7(e).

(B) If the NMOC emission rate calculated in paragraph (a)(1) of this section is equal to or greater than 34 megagrams per year, then the landfill owner or operator must either:

(i) Submit a gas collection and control system design plan within 1 year as specified in 252:100-47-12(d) and install and operate a gas collection and control system within 30 months according to 252:100-47-7(b) and (c);

(ii) Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the Tier 2 procedures provided in paragraph (a)(3) of this section;  
or

(iii) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the Tier 3 procedures provided in paragraph (a)(4) of this section.

(3) **Tier 2.** The landfill owner or operator must determine the site-specific NMOC concentration using the following sampling procedure. The landfill owner or operator must install at least two sample probes per hectare, evenly distributed over the landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The probes should be evenly distributed across the sample area. The sample probes should be located to avoid known areas of nondegradable solid waste. The owner or operator must collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using Method 25 or 25C of Appendix A of 40 CFR Part 60. Taking composite samples from different probes into a single cylinder is allowed; however, equal sample volumes must be taken from each probe. For each composite, the sampling rate, collection times, beginning and ending cylinder vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample volumes should not be less than one liter unless evidence can be provided to substantiate the accuracy of smaller volumes. Terminate compositing before the cylinder approaches ambient pressure where measurement accuracy diminishes. If more than the required number of samples is taken, all samples must be used in the analysis. The landfill owner or operator must divide the NMOC concentration from Method 25 or 25C by six to convert from  $C_{\text{NMOC}}$  as carbon to  $C_{\text{NMOC}}$  as hexane. If the landfill has an active or passive gas removal system in place, Method 25 or 25C samples may be collected from these systems

instead of surface probes provided the removal system can be shown to provide sampling as representative as the two sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe. The sample location on the common header pipe must be before any gas moving, condensate removal, or treatment system equipment. For active collection systems, a minimum of three samples must be collected from the header pipe.

(A) Within 60 days after the date of determining the NMOC concentration and corresponding NMOC emission rate, the owner or operator must submit the results according to 252:100-47-12(j)(2).

(B) The landfill owner or operator must recalculate the NMOC mass emission rate using Equation 1 or Equation 2 and the average site-specific NMOC concentration from the collected samples instead of the default value provided in paragraph (a)(1) of this section.

(C) If the resulting NMOC mass emission rate is less than 34 megagrams per year, then the owner or operator must submit a periodic estimate of NMOC emissions in an NMOC emission rate report according to 252:100-47-12(c), and must recalculate the NMOC mass emission rate annually as required under 252:100-47-7(e). The site-specific NMOC concentration must be retested every 5 years using the methods specified in this section.

(D) If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration is equal to or greater than 34 megagrams per year, the owner or operator must either:

(i) Submit a gas collection and control system design plan within 1 year as specified in 252:100-47-12(d) and install and operate a gas collection and control system within 30 months according to 252:100-47-7(b) and (c);

(ii) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the Tier 3 procedures specified in paragraph (a)(4) of this section; or

(iii) Conduct a surface emission monitoring demonstration using the Tier 4 procedures specified in paragraph (a)(6) of this section.

(4) **Tier 3.** The site-specific methane generation rate constant must be determined using the procedures provided in Method 2E of Appendix A of 40 CFR Part 60. The landfill owner or operator must estimate the NMOC mass emission rate using Equation 1 or Equation 2 and a site-specific methane generation rate constant, and the site-specific NMOC concentration as determined in paragraph (a)(3) of this section instead of the default values provided in paragraph (a)(1) of this section. The landfill owner or operator must compare the resulting NMOC mass emission rate to the standard of 34 megagrams per year.

(A) If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration and Tier 3 site-specific methane generation rate is equal to or greater than 34 megagrams per year, the owner or operator must either:

(i) Submit a gas collection and control system design plan within 1 year as specified in 252:100-47-12(d) and install and operate a gas collection and control system within 30 months according to 252:100-47-7(b) and (c); or

(ii) Conduct a surface emission monitoring demonstration using the Tier 4 procedures specified in paragraph (a)(6) of this section.

(B) If the NMOC mass emission rate is less than 34 megagrams per year, then the owner or operator must recalculate the NMOC mass emission rate annually using Equation 1 or Equation 2 and the site-specific Tier 2 NMOC concentration and Tier 3 methane

generation rate constant and submit a periodic NMOC emission rate report as provided in 252:100-47-12(c). The calculation of the methane generation rate constant is performed only once, and the value obtained from this test must be used in all subsequent annual NMOC emission rate calculations.

(5) **Other methods.** The owner or operator may use other methods to determine the NMOC concentration or a site-specific methane generation rate constant as an alternative to the methods required in paragraphs (a)(3) and (4) of this section if the method has been approved by the EPA Administrator.

(6) **Tier 4.** The landfill owner or operator must demonstrate that surface methane emissions are below 500 parts per million. Surface emission monitoring (SEM) must be conducted on a quarterly basis using the following procedures. Tier 4 is allowed only if the landfill owner or operator can demonstrate that NMOC emissions are greater than or equal to 34 Mg/yr but less than 50 Mg/yr using Tier 1 or Tier 2. If both Tier 1 and Tier 2 indicate NMOC emissions are 50 Mg/yr or greater, then Tier 4 cannot be used. In addition, the landfill must meet the criteria in subparagraph (a)(6)(H) of this section.

(A) The owner or operator must measure surface concentrations of methane along the entire perimeter of the landfill and along a pattern that traverses the landfill at no more than 30-meter intervals using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 252:100-47-10(d).

(B) The background concentration must be determined by moving the probe inlet upwind and downwind at least 30 meters from the waste mass boundary of the landfill.

(C) Surface emission monitoring must be performed in accordance with section 8.3.1 of Method 21 of Appendix A of 40 CFR Part 60 except that the probe inlet must be placed no more than 5 centimeters above the landfill surface; the constant measurement of distance above the surface should be based on a mechanical device such as with a wheel on a pole.

(i) The owner or operator must use a wind barrier, similar to a funnel, when onsite average wind speed exceeds 4 miles per hour or 2 meters per second or gust exceeding 10 miles per hour. Average on-site wind speed must also be determined in an open area at 5-minute intervals using an on-site anemometer with a continuous recorder and data logger for the entire duration of the monitoring event. The wind barrier must surround the SEM monitor, and must be placed on the ground, to ensure wind turbulence is blocked. SEM cannot be conducted if average wind speed exceeds 25 miles per hour.

(ii) Landfill surface areas where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover, and all cover penetrations must also be monitored using a device meeting the specifications provided in 252:100-47-10(d).

(D) Each owner or operator seeking to comply with the Tier 4 provisions in paragraph (a)(6) of this section must maintain records of surface emission monitoring as provided in 252:100-47-13(g) and submit a Tier 4 surface emissions report as provided in 252:100-47-12(d)(4)(C).

(E) If there is any measured concentration of methane of 500 parts per million or greater from the surface of the landfill, the owner or operator must submit a gas collection and control system design plan within 1 year of the first measured concentration of methane of 500 parts per million or greater from the surface of the landfill according to 252:100-

47-12(d) and install and operate a gas collection and control system according to 252:100-47-7(b) and (c) within 30 months of the most recent NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year based on Tier 2.

(F) If after four consecutive quarterly monitoring periods at a landfill, other than a closed landfill, there is no measured concentration of methane of 500 parts per million or greater from the surface of the landfill, the owner or operator must continue quarterly surface emission monitoring using the methods specified in this section.

(G) If after four consecutive quarterly monitoring periods at a closed landfill there is no measured concentration of methane of 500 parts per million or greater from the surface of the landfill, the owner or operator must conduct annual surface emission monitoring using the methods specified in this section.

(H) If a landfill has installed and operates a collection and control system that is not required by this subchapter, then the collection and control system must meet the following criteria:

(i) The gas collection and control system must have operated for at least 6,570 out of 8,760 hours preceding the Tier 4 surface emissions monitoring demonstration.

(ii) During the Tier 4 surface emissions monitoring demonstration, the gas collection and control system must operate as it normally would to collect and control as much landfill gas as possible.

(b) After the installation and startup of a collection and control system in compliance with this subchapter, the owner or operator must calculate the NMOC emission rate for purposes of determining when the system can be capped, removed, or decommissioned as provided in 252:100-47-7(f), using Equation 3 provided in Appendix R in accordance with the provisions of (b)(1) through (3) of this section.

(1) The flow rate of landfill gas,  $Q_{LFG}$ , must be determined by measuring the total landfill gas flow rate at the common header pipe that leads to the control system using a gas flow measuring device calibrated according to the provisions of section 10 of Method 2E of Appendix A of 40 CFR Part 60.

(2) The average NMOC concentration,  $C_{NMOC}$ , must be determined by collecting and analyzing landfill gas sampled from the common header pipe before the gas moving or condensate removal equipment using the procedures in Method 25 or Method 25C of Appendix A of 40 CFR Part 60. The sample location on the common header pipe must be before any condensate removal or other gas refining units. The landfill owner or operator must divide the NMOC concentration from Method 25 or Method 25C by six to convert from  $C_{NMOC}$  as carbon to  $C_{NMOC}$  as hexane.

(3) The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the EPA Administrator.

(A) Within 60 days after the date of calculating the NMOC emission rate for purposes of determining when the system can be capped or removed, the owner or operator must submit the results according to 252:100-47-12(j)(2).

(B) [Reserved]

(c) When calculating emissions for Prevention of Significant Deterioration purposes, the owner or operator of each MSW landfill subject to the provisions of this subchapter must estimate the NMOC emission rate for comparison to the Prevention of Significant Deterioration major source and significance levels in OAC 252:100-8, Part 7, using Compilation of Air Pollutant Emission

Factors, Volume I: Stationary Point and Area Sources (AP-42) or other approved measurement procedures.

(d) For the performance test required in 252:100-47-7(c)(1), the net heating value of the combusted landfill gas as determined in 40 CFR 60.18(f)(3) is calculated from the concentration of methane in the landfill gas as measured by Method 3C of Appendix A of 40 CFR Part 60. A minimum of three 30-minute Method 3C samples are determined. The measurement of other organic components, hydrogen, and carbon monoxide is not applicable. Method 3C may be used to determine the landfill gas molecular weight for calculating the flare gas exit velocity under 40 CFR 60.18(f)(4).

(1) Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the owner or operator must submit the results of the performance tests required by paragraph (b) or (d) of this section, including any associated fuel analyses, according to 252:100-47-12(j)(1).

(2) [Reserved]

(e) For the performance test required in 252:100-47-7(c)(2), Method 25 or 25C (Method 25C may be used at the inlet only) of Appendix A of 40 CFR Part 60 must be used to determine compliance with the 98 weight-percent efficiency or the 20 parts per million by volume outlet NMOC concentration level, unless another method to demonstrate compliance has been approved by the EPA Administrator as provided by 252:100-47-12(d)(2). Method 3, 3A, or 3C must be used to determine oxygen for correcting the NMOC concentration as hexane to 3 percent. In cases where the outlet concentration is less than 50 ppm NMOC as carbon (8 ppm NMOC as hexane), Method 25A should be used in place of Method 25. Method 18 may be used in conjunction with Method 25A on a limited basis (compound specific, e.g., methane) or Method 3C may be used to determine methane. The methane as carbon should be subtracted from the Method 25A total hydrocarbon value as carbon to give NMOC concentration as carbon. The landfill owner or operator must divide the NMOC concentration as carbon by 6 to convert the  $C_{\text{NMOC}}$  as carbon to  $C_{\text{NMOC}}$  as hexane. Equation 4 provided in Appendix R must be used to calculate efficiency.

(1) Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the owner or operator must submit the results of the performance tests, including any associated fuel analyses, according to 252:100-47-12(j)(1).

(2) [Reserved]

### **252:100-47-10. Compliance provisions**

An owner or operator of an existing MSW landfill shall comply with all provisions specified in 40 CFR 60.755, which is hereby incorporated by reference as it exists on July 1, 2002.

(a) Except as provided in OAC 252:100-47-12(d), the specified methods in paragraphs (a)(1) through (6) of this section must be used to determine whether the gas collection system is in compliance with 252:100-47-7(b)(2).

(1) For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with 252:100-47-7(b)(2)(A), either Equation 5 or Equation 6 provided in Appendix R and referenced in subparagraph (a)(1)(A) or (B) of this section must be used. The methane generation rate constant (k) and methane generation potential ( $L_0$ ) kinetic factors should be those published in the most recent AP-42 or other site-specific values demonstrated to be appropriate and approved by the EPA Administrator. If k has been determined as specified in 252:100-47-9(a)(4), the value of k determined from the test must

be used. A value of no more than 15 years must be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure.

(A) Equation 5 in Appendix R must be used for sites with unknown year-to-year solid waste acceptance rate.

(B) Equation 6 in Appendix R must be used for sites with known year-to-year solid waste acceptance rate.

(C) If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, Equation 5 or Equation 6. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using Equation 5 or Equation 6 or other methods must be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment.

(2) For the purposes of determining sufficient density of gas collectors for compliance with 252:100-47-7(b)(2)(B), the owner or operator must design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the Director, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.

(3) For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 252:100-47-7(b)(2)(C), the owner or operator must measure gauge pressure in the gas collection header applied to each individual well monthly. If a positive pressure exists, action must be initiated to correct the exceedance within 5 calendar days, except for the three conditions allowed under 252:100-47-8(2). Any attempted corrective measure must not cause exceedances of other operational or performance standards.

(A) If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement of positive pressure, the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but not later than 60 days after positive pressure was first measured. The owner or operator must keep records according to 252:100-47-13(e)(3).

(B) If corrective actions cannot be fully implemented within 60 days following the positive pressure measurement for which the root cause analysis was required, the owner or operator must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the positive pressure measurement. The owner or operator must submit the items listed in 252:100-47-12(h)(7) as part of the next annual report. The owner or operator must keep records according to 252:100-47-13(e)(4).

(C) If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Director, according to 252:100-47-12(h)(7) and (k). The owner or operator must keep records according to 252:100-47-13(e)(5).

(4) [Reserved]

(5) For the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator must monitor each well monthly for temperature as provided in

252:100-47-8(3). If a well exceeds the operating parameter for temperature, action must be initiated to correct the exceedance within 5 calendar days. Any attempted corrective measure must not cause exceedances of other operational or performance standards.

(A) If a landfill gas temperature less than 55 degrees Celsius (131 degrees Fahrenheit) cannot be achieved within 15 calendar days of the first measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit), the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after a landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit) was first measured. The owner or operator must keep records according to 252:100-47-13(e)(3).

(B) If corrective actions cannot be fully implemented within 60 days following the positive pressure measurement for which the root cause analysis was required, the owner or operator must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit). The owner or operator must submit the items listed in 252:100-47-12(h)(7) as part of the next annual report. The owner or operator must keep records according to 252:100-47-13(e)(4).

(C) If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Director, according to 252:100-47-12(h)(7) and (k). The owner or operator must keep records according to 252:100-47-13(e)(5).

(6) An owner or operator seeking to demonstrate compliance with 252:100-47-7(b)(2)(D) through the use of a collection system not conforming to the specifications provided in 252:100-47-14 must provide information satisfactory to the Director as specified in 252:100-47-12(d) demonstrating that off-site migration is being controlled.

(b) For purposes of compliance with 252:100-47-8(1), each owner or operator of a controlled landfill must place each well or design component as specified in the approved design plan as provided in 252:100-47-12(d). Each well must be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of:

(1) Five (5) years or more if active; or

(2) Two (2) years or more if closed or at final grade.

(c) The following procedures must be used for compliance with the surface methane operational standard as provided in 252:100-47-8(4):

(1) After installation and startup of the gas collection system, the owner or operator must monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in paragraph (d) of this section.

(2) The background concentration must be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells.

(3) Surface emission monitoring must be performed in accordance with section 8.3.1 of Method 21 of Appendix A of 40 CFR Part 60, except that the probe inlet must be placed

within 5 to 10 centimeters of the ground. Monitoring must be performed during typical meteorological conditions.

(4) Any reading of 500 parts per million or more above background at any location must be recorded as a monitored exceedance and the actions specified in subparagraphs (c)(4)(A) through (E) of this section must be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of 252:100-47-8(4).

(A) The location of each monitored exceedance must be marked and the location and concentration recorded. For location, the owner or operator must determine the latitude and longitude coordinates using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

(B) Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance must be made and the location must be re-monitored within 10 calendar days of detecting the exceedance.

(C) If the re-monitoring of the location shows a second exceedance, additional corrective action must be taken and the location must be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in subparagraph (c)(4)(E) of this section must be taken, and no further monitoring of that location is required until the action specified in subparagraph (c)(4)(E) of this section has been taken.

(D) Any location that initially showed an exceedance but has a methane concentration less than 500 parts per million methane above background at the 10-day re-monitoring specified in subparagraph (c)(4)(B) or (C) of this section must be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in paragraph (c)(4)(C) or (E) of this section must be taken.

(E) For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other collection device must be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the Director for approval.

(5) The owner or operator must implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

(d) Each owner or operator seeking to comply with the provisions in paragraph (c) of this section or 252:100-47-9(a)(6) must comply with the following instrumentation specifications and procedures for surface emission monitoring devices:

(1) The portable analyzer must meet the instrument specifications provided in section 6 of Method 21 of Appendix A of 40 CFR Part 60, except that "methane" replaces all references to "VOC".

(2) The calibration gas must be methane, diluted to a nominal concentration of 500 parts per million in air.

(3) To meet the performance evaluation requirements in section 8.1 of Method 21, the instrument evaluation procedures of section 8.1 of Method 21 must be used.

- (4) The calibration procedures provided in sections 8 and 10 of Method 21, must be followed immediately before commencing a surface monitoring survey.
- (e) The provisions of this subchapter apply at all times, including periods of startup, shutdown, or malfunction. During periods of startup, shutdown, and malfunction, the owner or operator must comply with the work practice specified in 252:100-47-8(5) in lieu of the compliance provisions in 252:100-47-10.

### **252:100-47-11. Monitoring of operations**

An owner or operator of an existing MSW landfill shall comply with all provisions specified in 40 CFR 60.756, which is hereby incorporated by reference as it exists on July 1, 2002.

(a) Each owner or operator seeking to comply with OAC 252:100-47-7(b)(2) for an active gas collection system must install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead and:

(1) Measure the gauge pressure in the gas collection header on a monthly basis as provided in 252:100-47-10(a)(3); and

(2) Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as follows:

(A) The nitrogen level must be determined using Method 3C of Appendix A of 40 CFR Part 60, unless an alternative test method is established as allowed by 252:100-47-12(d)(2).

(B) Unless an alternative test method is established as allowed by 252:100-47-12(d)(2), the oxygen level must be determined by an oxygen meter using Method 3A, 3C, or ASTM D6522-11 (incorporated by reference in 40 CFR 60.17). Determine the oxygen level by an oxygen meter using Method 3A, 3C, or ASTM D6522-11 (if sample location is prior to combustion) except that:

(i) The span must be set between 10 and 12 percent oxygen;

(ii) A data recorder is not required;

(iii) Only two calibration gases are required, a zero and span;

(iv) A calibration error check is not required; and

(v) The allowable sample bias, zero drift, and calibration drift are plus or minus 10 percent.

(C) A portable gas composition analyzer may be used to monitor the oxygen levels provided:

(i) The analyzer is calibrated; and

(ii) The analyzer meets all quality assurance and quality control requirements for Method 3A or ASTM D6522-11.

(3) Monitor temperature of the landfill gas on a monthly basis as provided in 252:100-47-10(a)(5). The temperature measuring device must be calibrated annually using the procedure in 40 CFR 60, Appendix A-1, Method 2, Section 10.3.

(b) Each owner or operator seeking to comply with 252:100-47-7(c) using an enclosed combustor must calibrate, maintain, and operate according to the manufacturer's specifications, the following equipment:

(1) A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of plus or minus 1 percent of the temperature being measured expressed in degrees Celsius or plus or minus 0.5 degrees Celsius, whichever is greater. A temperature

monitoring device is not required for boilers or process heaters with design heat input capacity equal to or greater than 44 megawatts.

(2) A device that records flow to the control device and bypass of the control device (if applicable). The owner or operator must:

(A) Install, calibrate, and maintain a gas flow rate measuring device that must record the flow to the control device at least every 15 minutes; and

(B) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(c) Each owner or operator seeking to comply with 252:100-47-7(c) using a non-enclosed flare must install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

(1) A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame.

(2) A device that records flow to the flare and bypass of the flare (if applicable). The owner or operator must:

(A) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the control device at least every 15 minutes; and

(B) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(d) Each owner or operator seeking to demonstrate compliance with 252:100-47-7(c) using a device other than a non-enclosed flare or an enclosed combustor or a treatment system must provide information satisfactory to the Director as provided in 252:100-47-12(d)(2) describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Director must review the information and either approve it, or request that additional information be submitted. The Director may specify additional appropriate monitoring procedures.

(e) Each owner or operator seeking to install a collection system that does not meet the specifications in 252:100-47-14 or seeking to monitor alternative parameters to those required by 252:100-47-8 through 252:100-47-11 must provide information satisfactory to the Director as provided in 252:100-47-12(d)(2) and (3) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Director may specify additional appropriate monitoring procedures.

(f) Each owner or operator seeking to demonstrate compliance with the 500 parts per million surface methane operational standard in 252:100-47-8(4) must monitor surface concentrations of methane according to the procedures provided in 252:100-47-10(c) and the instrument specifications in 252:100-47-10(d). Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 parts per million or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

(g) Each owner or operator seeking to demonstrate compliance with the control system requirements in 252:100-47-7(c) using a landfill gas treatment system must maintain and operate all monitoring systems associated with the treatment system in accordance with the site-specific

treatment system monitoring plan required in 252:100-47-13(b)(5)(B) and must calibrate, maintain, and operate according to the manufacturer's specifications a device that records flow to the treatment system and bypass of the treatment system (if applicable). The owner or operator must:

(1) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; and

(2) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(h) The monitoring requirements of paragraphs (b), (c), (d), and (g) of this section apply at all times the affected source is operating, except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. The owner or operator is required to complete monitoring system repairs in response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable.

#### **252:100-47-12. Reporting requirements**

~~(a) The owner or operator of an existing MSW landfill shall submit an initial design capacity report to the DEQ within 90 days of the effective date of the State Plan.~~

~~(b) The owner or operator of an existing MSW landfill having a design capacity equal to or greater than 2.5 million cubic meters and 2.5 million megagrams, shall submit an initial NMOC emission rate report to the DEQ within 90 days of the effective date of the State Plan. Subsequent NMOC emission rate reports shall be submitted annually thereafter, except as provided for in 40 CFR 60.757(b)(1)(ii) and (b)(3).~~

~~(c) The owner or operator of an existing MSW shall comply with the provisions specified in 40 CFR 60.757, except 60.757(a)(1) and (b)(1)(i), which is hereby incorporated by referenced as it appears on July 1, 2002.~~

(a) **Design capacity report.** For existing MSW landfills subject to this subchapter, the initial design capacity report must be submitted no later than 90 days after the effective date of EPA approval of the State Plan under section 111(d) of the Clean Air Act. The initial design capacity report must contain the following information:

(1) A map or plot of the landfill, providing the size and location of the landfill, and identifying all areas where solid waste may be landfilled according to the permit issued by DEQ.

(2) The maximum design capacity of the landfill. Where the maximum design capacity is specified in the permit issued by DEQ, a copy of the permit specifying the maximum design capacity may be submitted as part of the report. If the maximum design capacity of the landfill is not specified in the permit, the maximum design capacity must be calculated using good engineering practices. The calculations must be provided, along with the relevant parameters as part of the report. The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. If the owner or operator chooses to convert the design capacity from volume to mass or from mass to volume

to demonstrate its design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, the calculation must include a site-specific density, which must be recalculated annually. Any density conversions must be documented and submitted with the design capacity report. DEQ or the EPA Administrator may request other reasonable information as may be necessary to verify the maximum design capacity of the landfill.

**(b) Amended design capacity report.** An amended design capacity report must be submitted providing notification of an increase in the design capacity of the landfill, within 90 days of an increase in the maximum design capacity of the landfill to meet or exceed 2.5 million megagrams and 2.5 million cubic meters. This increase in design capacity may result from an increase in the permitted volume of the landfill or an increase in the density as documented in the annual recalculation required in OAC 252:100-47-13(f).

**(c) NMOC emission rate report.** For existing MSW landfills covered by this subchapter with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, the NMOC emission rate report must be submitted following the procedure specified in paragraph (j)(2) of this section no later than 90 days after the effective date of EPA approval of the State Plan under section 111(d) of the Clean Air Act. The NMOC emission rate report must be submitted to the Director annually following the procedure specified in paragraph (j)(2) of this section, except as provided for in paragraph (c)(3) of this section. The Director may request such additional information as may be necessary to verify the reported NMOC emission rate.

(1) The NMOC emission rate report must contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in 252:100-47-9(a) or (b), as applicable.

(2) The NMOC emission rate report must include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions.

(3) If the estimated NMOC emission rate as reported in the annual report to the Director is less than 34 megagrams per year in each of the next 5 consecutive years, the owner or operator may elect to submit, following the procedure specified in paragraph (j)(2) of this section, an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate must include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC emission rate is estimated. All data and calculations upon which this estimate is based must be provided to the Director. This estimate must be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate must be submitted to the Director. The revised estimate must cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

(4) Each owner or operator subject to the requirements of this subchapter is exempted from the requirements to submit an NMOC emission rate report, after installing a collection and control system that complies with 252:100-47-7(b) and (c), during such time as the collection and control system is in operation and in compliance with 252:100-47-8 and 252:100-47-10.

**(d) Collection and control system design plan.** The collection and control system design plan must be prepared and approved by a professional engineer and must meet the following requirements:

(1) The collection and control system as described in the design plan must meet the design requirements in 252:100-47-7(b) and (c).

(2) The collection and control system design plan must include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions of 252:100-47-8 through 252:100-47-13 proposed by the owner or operator.

(3) The collection and control system design plan must either conform to specifications for active collection systems in 252:100-47-14 or include a demonstration to the Director's satisfaction of the sufficiency of the alternative provisions to 252:100-47-14.

(4) Each owner or operator of an MSW landfill having a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters must submit a copy of the collection and control system design plan cover page that contains the engineer's seal to the Director within 1 year of the first NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year, except as follows:

(A) If the owner or operator elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided in 252:100-47-9(a)(3) and the resulting rate is less than 34 megagrams per year, annual periodic reporting must be resumed, using the Tier 2 determined site-specific NMOC concentration, until the calculated NMOC emission rate is equal to or greater than 34 megagrams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated NMOC emission rate based on NMOC sampling and analysis, must be submitted, following the procedures in paragraph (j)(2) of this section, within 180 days of the first calculated exceedance of 34 megagrams per year.

(B) If the owner or operator elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant k, as provided in Tier 3 in 252:100-47-9(a)(4), and the resulting NMOC emission rate is less than 34 megagrams per year, annual periodic reporting must be resumed. The resulting site-specific methane generation rate constant k must be used in the NMOC emission rate calculation until such time as the emissions rate calculation results in an exceedance. The revised NMOC emission rate report based on the provisions of 252:100-47-9(a)(4) and the resulting site-specific methane generation rate constant k must be submitted, following the procedure specified in paragraph (j)(2) of this section, to the Director within 1 year of the first calculated NMOC emission rate equaling or exceeding 34 megagrams per year.

(C) If the owner or operator elects to demonstrate that site-specific surface methane emissions are below 500 parts per million methane, based on the provisions of 252:100-47-9(a)(6), then the owner or operator must submit annually a Tier 4 surface emissions report as specified in this paragraph following the procedure specified in paragraph (j)(2) of this section until a surface emissions readings of 500 parts per million methane or greater is found. If the Tier 4 surface emissions report shows no surface emissions readings of 500 parts per million methane or greater for four consecutive quarters at a closed landfill, then the landfill owner or operator may reduce Tier 4 monitoring from a quarterly to an annual frequency. The Director may request such additional information as may be necessary to verify the reported instantaneous surface emission readings. The Tier 4 surface emissions report must clearly identify the location, date and time (to the nearest second), average wind speeds including wind gusts, and reading (in parts per million) of any value 500 parts per million methane or greater, other than non-repeatable, momentary readings. For location, the owner or operator must determine the latitude and longitude coordinates using an instrument with an accuracy of at least 4 meters. The

coordinates must be in decimal degrees with at least five decimal places. The Tier 4 surface emission report should also include the results of the most recent Tier 1 and Tier 2 results in order to verify that the landfill does not exceed 50 Mg/yr of NMOC.

(i) The initial Tier 4 surface emissions report must be submitted annually, starting within 30 days of completing the fourth quarter of Tier 4 surface emissions monitoring that demonstrates that site-specific surface methane emissions are below 500 parts per million methane, and following the procedure specified in paragraph (j)(2) of this section.

(ii) The Tier 4 surface emissions rate report must be submitted within 1 year of the first measured surface exceedance of 500 parts per million methane, following the procedure specified in paragraph (j)(2) of this section.

(D) If the landfill is in the closed landfill subcategory, the owner or operator must submit a collection and control system design plan to the Director within 1 year of the first NMOC emission rate report in which the NMOC emission rate equals or exceeds 50 megagrams per year, except as follows:

(i) If the owner or operator elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided in 252:100-47-9(a)(3) and the resulting rate is less than 50 megagrams per year, annual periodic reporting must be resumed, using the Tier 2 determined site-specific NMOC concentration, until the calculated NMOC emission rate is equal to or greater than 50 megagrams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated NMOC emission rate based on NMOC sampling and analysis, must be submitted, following the procedure specified in paragraph (j)(2) of this section, within 180 days of the first calculated exceedance of 50 megagrams per year.

(ii) If the owner or operator elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant k, as provided in Tier 3 in 252:100-47-9(a)(4), and the resulting NMOC emission rate is less than 50 megagrams per year, annual periodic reporting must be resumed. The resulting site-specific methane generation rate constant k must be used in the NMOC emission rate calculation until such time as the emissions rate calculation results in an exceedance. The revised NMOC emission rate report based on the provisions of 252:100-47-9(a)(4) and the resulting site-specific methane generation rate constant k must be submitted, following the procedure specified in paragraph (j)(2) of this section, to the Director within 1 year of the first calculated NMOC emission rate equaling or exceeding 50 megagrams per year.

(iii) The landfill owner or operator elects to demonstrate surface emissions are low, consistent with the provisions in paragraph (d)(4)(C) of this section.

(iv) The landfill has already submitted a gas collection and control system design plan consistent with the provisions of Subpart WWW of 40 CFR Part 60, or a state plan implementing Subpart Cc of 40 CFR Part 60.

(5) The landfill owner or operator must notify the Director that the design plan is completed and submit a copy of the plan's signature page. The Director has 90 days to decide whether the design plan should be submitted for review. If the Director chooses to review the plan, the approval process continues as described in paragraph (c)(6) of this section. However, if the Director indicates that submission is not required or does not respond within 90 days, the landfill owner or operator can continue to implement the plan with the recognition that the

owner or operator is proceeding at their own risk. In the event that the design plan is required to be modified to obtain approval, the owner or operator must take any steps necessary to conform any prior actions to the approved design plan and any failure to do so could result in an enforcement action.

(6) Upon receipt of an initial or revised design plan, the Director must review the information submitted under paragraphs (d)(1) through (3) of this section and either approve it, disapprove it, or request that additional information be submitted. Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems, or horizontal trenches only, leachate collection components, and passive systems. If the Director does not approve or disapprove the design plan, or does not request that additional information be submitted within 90 days of receipt, then the owner or operator may continue with implementation of the design plan, recognizing they would be proceeding at their own risk.

(7) If the owner or operator chooses to demonstrate compliance with the emission control requirements of this subchapter using a treatment system as defined in this subchapter, then the owner or operator must prepare a site-specific treatment system monitoring plan as specified in 252:100-47-13(b)(5).

(e) **Revised design plan.** The owner or operator who has already been required to submit a design plan under paragraph (d) of this section, or under Subpart WWW of 40 CFR Part 60, or a state plan implementing Subpart Cc of 40 CFR Part 60, must submit a revised design plan to the Director for approval as follows:

(1) At least 90 days before expanding operations to an area not covered by the previously approved design plan.

(2) Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted to the Director according to paragraph (d) of this section.

(f) **Closure report.** Each owner or operator of a controlled landfill must submit a closure report to the Director within 30 days of ceasing waste acceptance. The Director may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Director, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4).

(g) **Equipment removal report.** Each owner or operator of a controlled landfill must submit an equipment removal report to the Director 30 days prior to removal or cessation of operation of the control equipment.

(1) The equipment removal report must contain the following items:

(A) A copy of the closure report submitted in accordance with paragraph (f) of this section; and

(B) A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired, unless the report of the results of the performance test has been submitted to the EPA via the EPA's Central Data Exchange (CDX) as defined in subparagraph (j)(1)(A) of this section, or information that demonstrates that the GCCS will be unable to operate for 15 years due to declining gas flows. In the equipment removal report, the process unit(s) tested, the pollutant(s) tested, and the date

that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's CDX; and  
(C) Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 34 megagrams or greater of NMOC per year, unless the NMOC emission rate reports have been submitted to the EPA via the EPA's CDX. If the NMOC emission rate reports have been previously submitted to the EPA's CDX, a statement that the NMOC emission rate reports have been submitted electronically and the dates that the reports were submitted to the EPA's CDX may be submitted in the equipment removal report in lieu of the NMOC emission rate reports; or  
(D) For the closed landfill subcategory, dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year, unless the NMOC emission rate reports have been submitted to the EPA via the EPA's CDX. If the NMOC emission rate reports have been previously submitted to the EPA's CDX, a statement that the NMOC emission rate reports have been submitted electronically and the dates that the reports were submitted to the EPA's CDX may be submitted in the equipment removal report in lieu of the NMOC emission rate reports.

(2) The Director may request such additional information as may be necessary to verify that all of the conditions for removal in 252:100-47-7(f) have been met.

(h) **Annual report.** The owner or operator of a landfill seeking to comply with 252:100-47-7(e)(2) using an active collection system designed in accordance with 252:100-47-7(b) must submit to the Director, following the procedures specified in paragraph (j)(2) of this section, an annual report of the recorded information in paragraphs (h)(1) through (7) of this section. The initial annual report must be submitted within 180 days of installation and startup of the collection and control system. The initial annual report must include the initial performance test report required under 40 CFR 60.8, as applicable, unless the report of the results of the performance test has been submitted to the EPA via the EPA's CDX. In the initial annual report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's CDX. The initial performance test report must be submitted, following the procedure specified in paragraph (j)(1) of this section, no later than the date that the initial annual report is submitted. For enclosed combustion devices and flares, reportable exceedances are defined under 252:100-47-13(c)(1).

(1) Value and length of time for exceedance of applicable parameters monitored under 252:100-47-11(a)(1), (b), (c), (d), and (g).

(2) Description and duration of all periods when the gas stream was diverted from the control device or treatment system through a bypass line or the indication of bypass flow as specified under 252:100-47-11.

(3) Description and duration of all periods when the control device or treatment system was not operating and length of time the control device or treatment system was not operating.

(4) All periods when the collection system was not operating.

(5) The location of each exceedance of the 500 parts per million methane concentration as provided in 252:100-47-8(4) and the concentration recorded at each location for which an exceedance was recorded in the previous month. For location, the owner or operator must determine the latitude and longitude coordinates using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

(6) The date of installation and the location of each well or collection system expansion added pursuant to 252:100-47-10(a)(3), (a)(5), (b), and (c)(4).

(7) For any corrective action analysis for which corrective actions are required in 252:100-47-10(a)(3) or (5) and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

**(i) Initial performance test report.** Each owner or operator seeking to comply with 252:100-47-7(c) must include the following information with the initial performance test report required under 40 CFR 60.8:

(1) A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion;

(2) The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based;

(3) The documentation of the presence of asbestos or nondegradable material for each area from which collection wells have been excluded based on the presence of asbestos or nondegradable material;

(4) The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area;

(5) The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and

(6) The provisions for the control of off-site migration.

**(j) Electronic reporting.** The owner or operator must submit reports electronically according to paragraphs (j)(1) and (2) of this section.

(1) Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the owner or operator must submit the results of each performance test according to the following procedures:

(A) For data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT website at the time of the test, the owner or operator must submit the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI). CEDRI can be accessed through the EPA's Central Data Exchange (CDX). Performance test data must be submitted in a file format generated through the use of the EPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. If the owner or operator claims that some of the performance test information being submitted is confidential business information (CBI), the owner or operator must submit a complete file generated through the use of the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website, including information claimed to be CBI, on a compact disc, flash drive, or other commonly used electronic storage media to the EPA. The electronic media must be clearly marked as CBI and mailed to U.S. EPA/OAQPS/CORE CBI Office,

Attention: Group Leader, Measurement Policy Group, MD C404-02, 4930 Old Page Rd., Durham, NC 27703. The same ERT or alternate file with the CBI omitted must be submitted to the EPA via the EPA's CDX as described earlier in this subparagraph.

(B) For data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT website at the time of the test, the owner or operator must submit the results of the performance test to the Director.

(2) Each owner or operator required to submit reports following the procedure specified in this paragraph must submit reports to the EPA via the CEDRI. (CEDRI can be accessed through the EPA's CDX.) The owner or operator must use the appropriate electronic report in CEDRI for this subchapter or an alternate electronic file format consistent with the XML schema listed on the CEDRI website. If the reporting form specific to this subchapter is not available in CEDRI at the time that the report is due, the owner or operator must submit the report to the Director. Once the form has been available in CEDRI for 90 calendar days, the owner or operator must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subchapter, regardless of the method in which the reports are submitted.

(k) **Corrective action and the corresponding timeline.** The owner or operator must submit according to paragraphs (k)(1) and (2) of this section.

(1) For corrective action that is required according to 252:100-47-10(a)(3)(C) or (a)(5)(C) and is expected to take longer than 120 days after the initial exceedance to complete, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Director as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature monitoring value of 55 degrees Celsius (131 degrees Fahrenheit) or above. The Director must approve the plan for corrective action and the corresponding timeline.

(2) For corrective action that is required according to 252:100-47-10(a)(3)(C) or (a)(5)(C) and is not completed within 60 days after the initial exceedance, the owner or operator must submit a notification to the Director as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature exceedance.

(l) **Liquids addition.** The owner or operator of an affected landfill with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters that has employed leachate recirculation or added liquids based on a Research, Development, and Demonstration permit (issued through Resource Conservation and Recovery Act, subtitle D, 40 CFR Part 258) within the last 10 years must submit to the Director, annually, following the procedure specified in paragraph (j)(2) of this section, the following information:

(1) Volume of leachate recirculated (gallons per year) and the reported basis of those estimates (records or engineering estimates).

(2) Total volume of all other liquids added (gallons per year) and the reported basis of those estimates (records or engineering estimates).

(3) Surface area (acres) over which the leachate is recirculated (or otherwise applied).

(4) Surface area (acres) over which any other liquids are applied.

(5) The total waste disposed (megagrams) in the areas with recirculated leachate and/or added liquids based on on-site records to the extent data are available, or engineering estimates and the reported basis of those estimates.

(6) The annual waste acceptance rates (megagrams per year) in the areas with recirculated leachate and/or added liquids, based on on-site records to the extent data are available, or engineering estimates.

(7) The initial report must contain items in paragraphs (1)(1) through (6) of this section per year for the most recent 365 days as well as for each of the previous 10 years, to the extent historical data are available in on-site records, and the report must be submitted no later than:

(A) September 27, 2017, for landfills that commenced construction, modification, or reconstruction after July 17, 2014 but before August 29, 2016; or

(B) 365 days after the date of commenced construction, modification, or reconstruction for landfills that commence construction, modification, or reconstruction after August 29, 2016.

(8) Subsequent annual reports must contain items in paragraphs (1)(1) through (6) of this section for the 365-day period following the 365-day period included in the previous annual report, and the report must be submitted no later than 365 days after the date the previous report was submitted.

(9) Landfills in the closed landfill subcategory are exempt from reporting requirements contained in paragraphs (1)(1) through (7) of this section.

(10) Landfills may cease annual reporting of items in paragraphs (1)(1) through (6) of this section once they have submitted the closure report in 252:100-47-12(f).

**(m) Tier 4 notification.**

(1) The owner or operator of an affected landfill with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters must provide a notification of the date(s) upon which the owner or operator intends to demonstrate site-specific surface methane emissions are below 500 parts per million methane, based on the Tier 4 provisions of 252:100-47-9(a)(6). The owner or operator must also include a description of the wind barrier to be used during the SEM in the notification. Notification must be postmarked not less than 30 days prior to such date.

(2) If there is a delay to the scheduled Tier 4 SEM date due to weather conditions, including not meeting the wind requirements in 252:100-47-9(a)(6)(C)(i), the owner or operator of a landfill shall notify the Director by email or telephone no later than 48 hours before any known delay in the original test date, and arrange an updated date with the Director by mutual agreement.

**252:100-47-13. Recordkeeping requirements**

~~An owner or operator of an existing MSW landfill shall comply with all provisions specified in 40 CFR 60.758, which is hereby incorporated by reference as it exists on July 1, 2002.~~

(a) Except as provided in OAC 252:100-47-12(d)(2), each owner or operator of an MSW landfill subject to the provisions of 252:100-47-7(e) must keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report that triggered 252:100-47-7(e), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(b) Except as provided in 252:100-47-12(d)(2), each owner or operator of a controlled landfill must keep up-to-date, readily accessible records for the life of the control system equipment of the data listed in paragraphs (b)(1) through (5) of this section as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring must

be maintained for a minimum of 5 years. Records of the control device vendor specifications must be maintained until removal.

(1) Where an owner or operator subject to the provisions of this subchapter seeks to demonstrate compliance with 252:100-47-7(b):

(A) The maximum expected gas generation flow rate as calculated in 252:100-47-10(a)(1). The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by the EPA Administrator.

(B) The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 252:100-47-14(a)(1).

(2) Where an owner or operator subject to the provisions of this subchapter seeks to demonstrate compliance with 252:100-47-7(c) through use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity equal to or greater than 44 megawatts:

(A) The average temperature measured at least every 15 minutes and averaged over the same time period of the performance test.

(B) The percent reduction of NMOC determined as specified in 252:100-47-7(c)(2) achieved by the control device.

(3) Where an owner or operator subject to the provisions of this subchapter seeks to demonstrate compliance with 252:100-47-7(c)(2)(A) through use of a boiler or process heater of any size: a description of the location at which the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance testing.

(4) Where an owner or operator subject to the provisions of this subchapter seeks to demonstrate compliance with 252:100-47-7(c)(1) through use of a non-enclosed flare:

(A) The flare type (i.e., steam-assisted, air-assisted, or non-assisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in 40 CFR 60.18.

(B) Continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame or the flare flame is absent.

(5) Where an owner or operator subject to the provisions of this subchapter seeks to demonstrate compliance with 252:100-47-7(c)(3) through use of a landfill gas treatment system:

(A) Bypass records. Records of the flow of landfill gas to, and bypass of, the treatment system.

(B) Site-specific treatment monitoring plan, to include:

(i) Monitoring records of parameters that are identified in the treatment system monitoring plan and that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. At a minimum, records should include records of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas.

(ii) Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas.

(iii) Documentation of the monitoring methods and ranges, along with justification for their use.

- (iv) Identify who is responsible (by job title) for data collection.
- (v) Processes and methods used to collect the necessary data.
- (vi) Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems.

(c) Except as provided in 252:100-47-12(d)(2), each owner or operator of a controlled landfill subject to the provisions of this subchapter must keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in 252:100-47-11 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.

(1) The following constitute exceedances that must be recorded and reported under 252:100-47-12:

(A) For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million Btu per hour) or greater, all 3-hour periods of operation during which the average temperature was more than 28 degrees Celsius (82 degrees Fahrenheit) below the average combustion temperature during the most recent performance test at which compliance with 252:100-47-7(c) was determined.

(B) For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under paragraph (b)(3) of this section.

(2) Each owner or operator subject to the provisions of this subchapter must keep up-to-date, readily accessible continuous records of the indication of flow to the control system and the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under 252:100-47-11.

(3) Each owner or operator subject to the provisions of this subchapter who uses a boiler or process heater with a design heat input capacity of 44 megawatts or greater to comply with 252:100-47-7(c) must keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other regulatory requirements.)

(4) Each owner or operator seeking to comply with the provisions of this subchapter by use of a non-enclosed flare must keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under 252:100-47-11(c), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent.

(5) Each owner or operator of a landfill seeking to comply with 252:100-47-7(e) using an active collection system designed in accordance with 252:100-47-7(b) must keep records of periods when the collection system or control device is not operating.

(d) Except as provided in 252:100-47-12(d)(2), each owner or operator subject to the provisions of this subchapter must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label on each collector that matches the labeling on the plot map.

(1) Each owner or operator subject to the provisions of this subchapter must keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under 252:100-47-10(b).

(2) Each owner or operator subject to the provisions of this subchapter must keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in 252:100-47-

14(a)(3)(A) as well as any nonproductive areas excluded from collection as provided in 252:100-47-14(a)(3)(B).

(e) Except as provided in 252:100-47-12(d)(2), each owner or operator subject to the provisions of this subchapter must keep for at least 5 years up-to-date, readily accessible records of the following:

(1) All collection and control system exceedances of the operational standards in 252:100-47-8, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

(2) Each owner or operator subject to the provisions of this subchapter must also keep records of each wellhead temperature monitoring value of 55 degrees Celsius (131 degrees Fahrenheit) or above, each wellhead nitrogen level at or above 20 percent, and each wellhead oxygen level at or above 5 percent.

(3) For any root cause analysis for which corrective actions are required in 252:100-47-10(a)(3) or (5), keep a record of the root cause analysis conducted, including a description of the recommended corrective action(s) taken, and the date(s) the corrective action(s) were completed.

(4) For any root cause analysis for which corrective actions are required in 252:100-47-10(a)(3)(B) or (a)(5)(B), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

(5) For any root cause analysis for which corrective actions are required in 252:100-47-10(a)(3)(C) or (a)(5)(C), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates, and a copy of any comments or final approval on the corrective action analysis or schedule from DEQ.

(f) Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, as provided in the definition of "design capacity," must keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(g) Landfill owners or operators seeking to demonstrate that site-specific surface methane emissions are below 500 parts per million by conducting surface emission monitoring under the Tier 4 procedures specified in 252:100-47-9(a)(6) must keep for at least 5 years up-to-date, readily accessible records of all surface emissions monitoring and information related to monitoring instrument calibrations conducted according to Sections 8 and 10 of Method 21 of Appendix A of 40 CFR Part 60, including all of the following items:

(1) Calibration records:

(A) Date of calibration and initials of operator performing the calibration.

(B) Calibration gas cylinder identification, certification date, and certified concentration.

(C) Instrument scale(s) used.

(D) A description of any corrective action taken if the meter readout could not be adjusted to correspond to the calibration gas value.

- (E) If an owner or operator makes their own calibration gas, a description of the procedure used.
- (2) Digital photographs of the instrument setup. The photographs must be time and date-stamped and taken at the first sampling location prior to sampling and at the last sampling location after sampling at the end of each sampling day, for the duration of the Tier 4 monitoring demonstration.
- (3) Timestamp of each surface scan reading:
  - (A) Timestamp should be detailed to the nearest second, based on when the sample collection begins.
  - (B) A log for the length of time each sample was taken using a stopwatch (e.g., the time the probe was held over the area).
- (4) Location of each surface scan reading. The owner or operator must determine the coordinates using an instrument with an accuracy of at least 4 meters. Coordinates must be in decimal degrees with at least five decimal places.
- (5) Monitored methane concentration (parts per million) of each reading.
- (6) Background methane concentration (parts per million) after each instrument calibration test.
- (7) Adjusted methane concentration using most recent calibration (parts per million).
- (8) For readings taken at each surface penetration, the unique identification location label matching the label specified in subsection (d) of this section.
- (9) Records of the operating hours of the gas collection system for each destruction device.
- (h) Except as provided in 252:100-47-12(d)(2), each owner or operator subject to the provisions of this subchapter must keep for at least 5 years up-to-date, readily accessible records of all collection and control system monitoring data for parameters measured in 252:100-47-11(a)(1), (2), and (3).
- (i) Any records required to be maintained by this subchapter that are submitted electronically via the EPA's CDX may be maintained in electronic format.
- (j) For each owner or operator reporting leachate or other liquids addition under 252:100-47-12(l), keep records of any engineering calculations or company records used to estimate the quantities of leachate or liquids added, the surface areas for which the leachate or liquids were applied, and the estimates of annual waste acceptance or total waste in place in the areas where leachate or liquids were applied.

#### **252:100-47-14. Specifications for active collection systems**

An owner or operator of an existing MSW landfill shall comply with all provisions specified in 40 CFR 60.759, which is hereby incorporated by reference as it exists on July 1, 2002.

(a) Each owner or operator seeking to comply with OAC 252:100-47-7(b) must site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the Director.

(1) The collection devices within the interior must be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues must be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, resistance to the refuse decomposition

heat, and ability to isolate individual components or sections for repair or troubleshooting without shutting down entire collection system.

(2) The sufficient density of gas collection devices determined in paragraph (a)(1) of this section must address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

(3) The placement of gas collection devices determined in paragraph (a)(1) of this section must control all gas producing areas, except as provided by subparagraphs (a)(3)(A) and (B) of this section.

(A) Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under 252:100-47-13(d). The documentation must provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and must be provided to the Director upon request.

(B) Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Director upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill.

(i) The NMOC emissions from each section proposed for exclusion must be computed using Equation 7 provided in Appendix R.

(ii) If the owner or operator is proposing to exclude, or cease gas collection and control from, nonproductive physically separated (e.g., separately lined) closed areas that already have gas collection systems, NMOC emissions from each physically separated closed area must be computed using either Equation 3 or Equation 7 provided in Appendix R.

(C) The values for  $k$  and  $C_{NMOC}$  determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (the distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for  $k$ ,  $L_0$ , and  $C_{NMOC}$  provided in 252:100-47-9 or the alternative values from 252:100-47-9 must be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions, provided the nature, location, age, and amount of the nondegradable material is documented as provided in subparagraph (a)(3)(A) of this section.

(b) Each owner or operator seeking to comply with 252:100-47-7(b) must construct the gas collection devices using the following equipment or procedures:

(1) The landfill gas extraction components must be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system must extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors must be perforated to allow gas entry without head loss sufficient to impair performance across the

intended extent of control. Perforations must be situated with regard to the need to prevent excessive air infiltration.

(2) Vertical wells must be placed so as not to endanger underlying liners and must address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors must be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices must be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

(3) Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly must include a positive closing throttle valve, any necessary seals and couplings, access couplings, and at least one sampling port. The collection devices must be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

(c) Each owner or operator seeking to comply with 252:100-47-7(c) must convey the landfill gas to a control system in compliance with 252:100-47-7(c) through the collection header pipe(s). The gas mover equipment must be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:

(1) For existing collection systems, the flow data must be used to project the maximum flow rate. If no flow data exist, the procedures in paragraph (c)(2) of this section must be used.

(2) For new collection systems, the maximum flow rate must be in accordance with 252:100-47-10(a)(1).